

CLAIMS

- 1 1. An immersion lithographic system for patterning a work piece arranged at an image plane  
2 and covered at least partly with a layer sensitive to electromagnetic radiation, comprising:  
3 - a source emitting electromagnetic radiation onto an object plane,  
4 - a modulator, adapted to receive and modulate said electromagnetic radiation at said object  
5 plane in accordance to an input pattern description, and to relay said electromagnetic  
6 radiation toward said work piece,  
7 - an immersion medium contacting at least a portion of an immersion optics of said  
8 lithographic system and a portion of said work piece, wherein said immersion medium is  
9 supplied through at least one orifice arranged in said immersion optic.
- 1 2. The apparatus according to claim 1, wherein said modulator is an SLM.
- 1 3. The apparatus according to claim 2, wherein said SLM comprises reflective pixels.
- 1 4. The apparatus according to claim 3, wherein said reflective pixels are micromirrors.
- 1 5. The apparatus according to claim 1, wherein said modulator is a acoustooptical  
2 modulator.
- 1 6. The apparatus according to claim 1, wherein said source emitting electromagnetic  
2 radiation is an excimer laser.
- 1 7. The apparatus according to claim 1, further comprising a porous or fibrous material  
2 through which said immersion medium is supplied.
- 1 8. The apparatus according to claim 1, further comprising at least one immersion medium  
2 removal orifice.
- 1 9. The apparatus according to claim 8, further comprising a porous or fibrous material  
2 through which said immersion medium is removed.

- 1 10. The apparatus according to claim 7 or 9, wherein said at porous material is kept  
2 incompletely saturated with said immersion medium.
- 1 11. An immersion lithographic system for patterning a work piece arranged at an image  
2 plane and covered at least partly with a layer sensitive to electromagnetic radiation,  
3 comprising  
4 - a source emitting electromagnetic radiation onto an object plane,  
5 - a mask arranged at said object plane to relay said electromagnetic radiation toward said  
6 work piece,  
7 - an immersion medium contacting at least a portion of an immersion optics of said  
8 lithographic system and a portion of said work piece, wherein said immersion medium is  
9 supplied through at least one orifice arranged in said immersion optics.
- 1 12. The apparatus according to claim 11, wherein said source emitting electromagnetic  
2 radiation is an excimer laser.
- 1 13. The apparatus according to claim 11, further comprising a porous or fibrous material  
2 through which said immersion medium is supplied.
- 1 14. The apparatus according to claim 11, further comprising at least one immersion medium  
2 removal orifice.
- 1 15. The apparatus according to claim 14, further comprising a porous or fibrous material  
2 through which said immersion medium is removed.
- 1 16. The apparatus according to claim 13 or 15, wherein said at porous or fibrous material is  
2 kept incompletely saturated with said immersion medium.
- 1 17. An immersion lithographic system for patterning a work piece arranged at an image plane  
2 and covered at least partly with a layer sensitive to electromagnetic radiation, comprising  
3 - a source emitting electromagnetic radiation onto an object plane,

- 4    - a modulator, adapted to receive and modulate said electromagnetic radiation at said object  
5       plane in accordance to an input pattern description and to relay said electromagnetic  
6       radiation toward said work piece,
- 7    - an immersion medium contacting at least a portion of a objective lens of said lithographic  
8       system and a portion of said work piece, wherein an area of said contacting is restricted by  
9       capillary forces.

1    18. The immersion lithography system according to claim 17, further comprising a  
2       immersion medium reservoir for supplying immersion medium to said portion of said  
3       objective lens and said workpiece.

1    19. The immersion lithography system according to claim 18, wherein said immersion  
2       medium is supplied through a porous or fibrous material.

1    20. An immersion lithographic system for patterning a work piece arranged at an image plane  
2       and covered at least partly with a layer sensitive to electromagnetic radiation, comprising  
3       - a source emitting electromagnetic radiation onto an object plane,  
4       - a mask, adapted to receive and modulate said electromagnetic radiation at said object  
5       plane and to relay said electromagnetic radiation toward said work piece,  
6       - an immersion medium contacting at least a portion of a final lens of said lithographic  
7       system and a portion of said work piece, wherein an area of said contacting is restricted by  
8       capillary forces.

1    21. The immersion lithography system according to claim 17, further comprising a  
2       immersion medium reservoir for supplying immersion medium to said portion of said  
3       objective lens and said workpiece.

1    22. The immersion lithography system according to claim 18, wherein said immersion  
2       medium is supplied through a porous or fibrous material.

1    23. A method for patterning a workpiece arranged at an image plane and covered at least  
2       partly with a layer sensitive to electromagnetic radiation, including the actions of:  
3       - emitting electromagnetic radiation onto an object plane,

- 4 - modulating said electromagnetic radiation at said object plane in accordance to an input  
5 pattern description,
- 6 - relaying said electromagnetic radiation toward said workpiece,
- 7 - supplying an immersion medium to contact at least a portion of an objective lens of said  
8 lithographic system and at least a portion of said workpiece.

1 24. The method according to claim 23, further comprising the action of:

- 2 - restricting a lateral extension of said contact by capillary forces.

1 25. A method for patterning a workpiece arranged at an image plane and covered at least  
2 partly with a layer sensitive to electromagnetic radiation, including the actions of:

- 3 - emitting electromagnetic radiation onto an object plane,
- 4 - modulating said electromagnetic radiation at said object plane in accordance to an input  
5 pattern description,
- 6 - relaying said electromagnetic radiation toward said workpiece,
- 7 - contacting at least a portion of an objective lens of said lithographic system and at least a  
8 portion of said workpiece via a immersion medium, wherein said contacting is restricted  
9 in a lateral direction of said workpiece by capillary forces.

1 26. The method according to claim 25, further including the action of:

- 2 - supplying said immersion medium via a immersion medium reservoir.

1 27. The method according to claim 26, wherein said immersion medium is supplied through  
2 a porous or fibrous material.

1 28. A method for patterning a workpiece arranged at an image plane and covered at least  
2 partly with a layer sensitive to electromagnetic radiation, including the actions of:

- 3 - emitting electromagnetic radiation onto an object plane,
- 4 - modulating said electromagnetic radiation at said object plane in accordance to an input  
5 pattern description,
- 6 - relaying said electromagnetic radiation toward said workpiece,
- 7 - forming an immersion medium film to contact at least a portion of an objective lens of  
8 said lithographic system and at least a portion of said workpiece,

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- 9 - supplying immersion medium to said immersion medium film to maintain its lateral
- 10 dimensions while moving said objective lens over said workpiece.